

Contents

JANUARY

Plenary and Session lectures presented at the Twentieth International Conference on Solution Chemistry held in Jerusalem, Israel: 6-11 August 1989

Y. Marcus and S. Yariv	iv	Preface
R. Cohen-Adad, M-T. Saugier Cohen-Adad and R. Ouaini	1	Choice of a model for calculation and critical evaluation of solid-liquid electrolyte phase diagrams. Application to the ternary system NaCl-KCl-H ₂ O
M. J. Blandamer and J. Burgess	9	Solute-solute interactions and the kinetics of chemical reactions in aqueous solutions
R. W. Taft, F. Anvia, J-F. Gal, S. Walsh, M. Capon, M. C. Holmes, K. Hosn, G. Oloumi, R. Vasanwala and S. Yazdani	17	Free energies of cation-molecule complex formation and cation-solvent transfers
A. Ben-Naim	25	Preferential solvation in two- and in three-component systems
M. Chabanel	35	Ionic aggregates of 1-1 salts in non-aqueous solutions: Structure, thermodynamics and solvation
J. B. F. N. Engberts and J-J.H. Nusselder	47	The effect of chain packing on surfactant aggregation in aqueous solution
G. Barone and C. Giancola	57	Peptide-peptide interactions in water and concentrated urea solutions

Plenary lectures presented at the Sixth International Conference on High Temperatures - Chemistry of Inorganic Materials at High Temperatures held in Gaithersburg, Maryland, USA: 3-7 April 1989

I. Ansara	71	Thermodynamic modelling of solution phases and phase diagram calculations
A. Kaldor and D. M. Cox	79	Recent advances in the chemistry of gas phase transition metal clusters
K. E. Spear and R. R. Kirkx	89	Role of high temperature chemistry in CVD (chemical vapor deposition) processing
J. D. Corbett, E. Garcia, Y-U. Kwon and A. Guloy	103	Chemical clusters from solid state systems at high temperatures. Interstitials as a means to stability and versatility
R. A. Rapp	113	Hot corrosion of materials
D. R. Olander	123	Laser-pulse-vaporization of refractory materials

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Electroanalytical Chemistry (Y. Marcus)	139	Recommended methods for the purification of solvents and tests for impurities: 1,2-Ethanediol and 2,2,2-Trifluoroethanol
Interdivisional Working Party on Harmonization of Quality Assurance Schemes for Analytical Laboratories (W. D. Pocklington)	149	Harmonized protocols for the adoption of standardized analytical methods and for the presentation of their performance characteristics
Commission on Atmospheric Chemistry (J. Slanina)	163	Inventory of current tropospheric sampling programs

FEBRUARY

Plenary lectures presented at the International Conference on Nitroxide Radicals held in Novosibirsk, USSR: 18-22 September 1989

L. B. Volodarsky	iv	Preface
L. B. Volodarsky	177	Advances in the chemistry of stable nitroxides
H. G. Aurich	183	The chemistry of vinyl nitroxides
X.-K. Jiang	189	Polyfluorinated nitroxides
M. J. Perkins, C. Berti, D. J. Brooks, L. Grierson, J. A.-M. Grimes, T. C. Jenkins and S. L. Smith	195	Acyl nitroxides: reactions and reactivity
J. F. W. Keana, L. Lex, J. S. Mann, J. M. May, J. H. Park, S. Pou, V. S. Prabhu, G. M. Rosen, B. J. Sweetman and Y. Wu	201	Novel nitroxides for spin-labelling, -trapping, and magnetic resonance imaging applications
K. Hideg	207	Novel, potentially useful spin-label reagents
V. Bowry, J. Lusztyk and K. U. Ingold	213	Calibration of very fast alkyl radical 'clock' rearrangements using nitroxides
M. Yamaguchi, T. Miyazawa, T. Takata and T. Endo	217	Application of redox system based on nitroxides to organic synthesis
A. Rassat	223	Magnetic properties of nitroxide multiradicals
M. Sueki, G. R. Eaton and S. S. Eaton	229	Multidimensional EPR imaging of nitroxides
H. M. Swartz	235	The use of nitroxides in viable biological systems: an opportunity and challenge for chemists and biochemists
J. K. More, K. M. More, G. R. Eaton and S. S. Eaton	241	Metal-nitroxyl interactions - 55: Manganese(III) - nitroxyl electron-electron spin-spin interaction
L. J. Berliner	247	The use of spin labels in looking at subtle conformational changes in blood coagulation proteins
J. S. Hyde, J.-J. Yin, J. B. Feix and W. L. Hubbell	255	Advances in spin label oximetry

Ya. S. Lebedev	261	Nitroxide radicals in studies of correlation between molecular mobility and chemical reactivity
D. Marsh	265	Studies of membrane dynamics using nitroxide spin labels
M. K. Bowman, T. J. Michalski, M. Peric and H. J. Halpern	271	Fourier-transform-EPR and low-frequency-EPR studies of nitroxides
L. Kevan and P. Baglioni	275	Electron spin-echo modulation studies of ionic and nonionic micelle structure via stearic acid nitroxide probes
G. I. Likhtenstein	281	The use of nitroxides in the solution of some problems of chemical biophysics
G. Sosnovsky	289	The quest for a predictive design of anticancer drugs
C. H. Kennedy, K. R. Maples and R. P. Mason	295	<i>In vivo</i> detection of free radical metabolites
C. F. Chignell	301	Spin trapping studies of photochemical reactions
A. R. Forrester and D. B. McKay	307	Formation of free radicals in food constituents by γ -irradiation
E. G. Rozantsev	311	Some problems of nitroxyl chemistry

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Agrochemicals (P. T. Holland)	317	Mass spectrometric determination of pesticide residues (IUPAC reports on pesticides no. 25)
Commission on Agrochemicals (J. A. R. Bates)	337	The prediction of pesticide residues in crops by the optimum use of existing data (IUPAC reports on pesticides no. 26)
Commission on Agrochemicals (L. A. Golovleva, N. Aharonson, R. Greenhalgh, N. Sethunathian and J. W. Vonk)	351	The role and limitations of microorganisms, in the conversion of xenobiotics (IUPAC reports on pesticides no. 27)
Commission on Teaching of Clinical Chemistry (N. De Cediél, C. G. Fraser, A. Deom, L. Josefsson, H. G. J. Worth and O. Zinder)	365	Training in clinical laboratory management (Guidelines 1988)

MARCH

Plenary and Invited lectures presented at the Sixth International Symposium on Novel Aromatic Compounds held in Toyonaka, Osaka, Japan: 20-25 August 1989

I. Murata, H. Iwamura and T. Asao	iv	Preface
-----------------------------------	----	---------

Plenary Lectures

F. Bickelhaupt	373	Small cyclophanes: the bent benzene business
----------------	-----	----------------------------------------------

H. Bock	383	Novel main group-element cyclic molecules and their radical ions: are they aromatic?
S. Hünig	395	Aromatic/quinoid systems: principles and applications
H. Kroto	407	C ₆₀ , fullerenes, giant fullerenes and soot
F. Toda	417	A modern aspect of classical aromatic compounds

Invited Lectures

Theoretical Studies

B. M. Gimarc	423	Molecular and electronic structures of planar inorganic rings
I. Gutman	429	Nonaromatic benzenoid hydrocarbons
W. C. Herndon, D. A. Connor and P. Lin	435	Structure–enthalpy relationships in polycyclic cata-condensed aromatic hydrocarbons
H. Hosoya, H. Kumazaki, K. Chida, M. Ohuchi and Y.-D. Gao	445	How do the polycyclic aromatic hydrocarbons approach infinity?
Y. Jiang and H. Zhang	451	Aromaticities and reactivities based on energy partitioning

Spectroscopic Studies

Y. Harada	457	Penning ionization electron spectroscopy of organic molecules: stereochemistry of molecular orbitals
M. Barfield, M. J. Collins, J. E. Gready, P. M. Hatton, S. Sternhell and C. W. Tansey	463	NMR studies of bond-orders

Studies on Organic Metals

J. Y. Becker, J. Bernstein, S. Bittner and S. S. Shaik	467	New 'Te–TTF' dimers, aryl-substituted TCNQ and quinone derivatives: synthesis, electrochemistry and molecular structure
M. R. Bryce and A. J. Moore	473	Organic metals: synthesis and solid state properties of new extended tetrathiafulvalene and selenatrithiafulvalene derivatives
K. Nakasuji	477	New multi-stage redox systems and new organic molecular metals
G. C. Papavassiliou	483	New tetraheterafulvalenes, metal 1,2-diheterolenes and some of their products

Studies on Host–Guest Chemistry

C. D. Gutsche, J. S. Rogers, D. Stewart and K.-A. See	485	Calixarenes: paradoxes and paradigms in molecular baskets
S. Misumi	493	Amine selective coloration with chromo-acerands
I. O. Sutherland	499	Cyclophanes as synthetic receptors
F. Vögtle, A. Ostrowicki, P. Knops, S. Billen and K. Mittelbach	505	New strained and chiral aromatic molecules

Organic Experiments

T. Asao	507	Azulenic novel π -electronic compounds
A. J. Ashe, III, F. J. Drone, C. M. Kausch, J. Kroker and S. M. Al-Taweel	513	Borepins and group 15 element heteroles
D. A. Dougherty	519	New high-spin π systems
P. J. Garratt, D. Payne and A. Tsotinis	525	Battered benzene and twisted ethene
K. Hafner	531	Novel pentafulvenes—versatile building blocks in π -perimeter chemistry
B. Halton	541	Alkylidenecycloproparenes: strained and polar aromatics
J. C. Martin and L. J. Schaad	547	Sigma-delocalized aromatic species formed from cyclic arrays of hypervalent main-group element species
T. Sugimoto and Z. Yoshida	551	Overall view of cyclic polycalicenyls
E. Vogel	557	Novel porphyrinoids
X. C. Wang and H. N. C. Wong	565	The chemistry of cycloocta [2,1- <i>b</i> :3,4- <i>b'</i>] dipyridine and its derivatives
G. Yamamoto	569	Use of benzene rings as parts of rigid rotors: dynamic stereochemistry of 9-(aryl-X)- tritycene derivatives

APRIL

Plenary* and Invited lectures presented at the Fifth International Symposium on Organometallic Chemistry Directed Toward Organic Synthesis, held in Florence, Italy: 1-6 October 1989

G. Casnati, A. Ricci and P. Salvadori	iv	Preface: <i>in memoriam</i> J. K. Stille and P. Pino
P. J. Dickens, J. P. Gilday, J. T. Negri and D. A. Widdowson	575	Chromium directed regio- and stereocontrol: A new chapter in aromatic natural product synthesis
Y. Ito	583	New metallation and synthetic applications of isonitriles
H. Brunner	589	Enantioselective catalysis with transition metal compounds: Right or left, that is the question
J. Barluenga	595	Preparation and some applications of functionalized organo-lithium compounds in organic synthesis
*G. Cainelli, M. Panunzio, P. Andreoli, G. Martelli, G. Spunta, D. Giacomini and E. Bandini	605	Metallo-imines: Useful reagents in organic synthesis

*R. Noyori, M. Uchiyama, H. Kato, S. Wakabayashi and Y. Hayakawa	613	Organometallic methodologies for nucleic acid synthesis
M. Catellani, G. P. Chiusoli and M. Costa	623	Some palladium-catalyzed carbon-carbon bond formation reactions
R. O. Duthaler, A. Hafner and M. Riediker	631	Asymmetric C-C bond formation with titanium carbohydrate complexes
A. Dondoni	643	New organometallic reagents: Use of 2-(Trimethylsilyl)thiazole in acyclic stereo-selective strategies
R. C. Larock	653	New applications of organopalladium compounds in organic synthesis
E. Drent	661	Opportunities in homogeneous catalysis
V. Snieckus	671	Regioselective synthetic processes based on the aromatic metalation strategy
P. I. Dem'yanov, I. M. Shtyrkov, G. V. Fyodorova and V. S. Petrosyan	681	Alkali salts of 1,3,3-trisubstituted propynes and use of these organometallic compounds in syntheses
*L. S. Hegedus	691	Chromium carbene complexes in the synthesis of molecules of biological interest
F. Bickelhaupt	699	New trends in dimetallic synthons
G. A. Molander and K. Mautner	707	Novel processes for stereoselective organic synthesis
S. Cacchi	713	The palladium-catalyzed hydroarylation and hydrovinylation of carbon-carbon multiple bonds: New perspectives in organic synthesis
X. Lu and D. Ma	723	Stereoselective isomerization of acetylenic derivatives as a new methodology in organic synthesis
*H. Lehmkuhl	731	Specific reactions of organylmetal complexes with unsaturated hydrocarbons
D. Mansuy	741	Biomimetic catalysts for selective oxidation in organic chemistry
T. Imamoto	747	Carbonyl addition reactions promoted by cerium reagents

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Biotechnology (H. G. W. Leuenberger)	753	Interrelations of chemistry and biotechnology —I. Biotransformation—a useful tool in organic chemistry
Commission on Biotechnology (R. K. Rothmel and A. M. Chakrabarty)	769	Interrelations of chemistry and biotechnology —II. Microbial degradation of synthetic recalcitrant compounds

- | | | |
|------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commission on Oils, Fats and Derivatives (H. Brüsweiler and A. Hautfenne) | 781 | Determination of ester-emulsifiers components content after hydrolysis and silylation by gas chromatography: Results of a collaborative study and the standardised method |
| Commission on Oils, Fats and Derivatives (J. L. Beare-Rogers and A. Dieffenbacher) | 795 | Determination of <i>n</i> -3 and <i>n</i> -6 unsaturated fatty acids in vegetable oils and fats by capillary gas liquid chromatography: Results of a collaborative study and the standardised method |

MAY

Plenary lectures presented at the Third International Seminar on Flame Structure, held in Alma-Ata, USSR: 18-22 September 1989

- | | | |
|------------------------------|-----|------------------------------------------------------------------------|
| D. Bradley and A. K. C. Lau | 803 | The mathematical modelling of premixed turbulent combustion |
| H. F. Calcote and D. G. Keil | 815 | The role of ions in soot formation |
| L. de Luca | 825 | A critical review of solid rocket propellant transient flame models |
| R. M. Fristrom | 839 | Flame structure studies: Past, present and future |
| O. E. Kashireninov | 851 | Metals vapour oxidation in diffusion flames |
| A. G. Merzhanov | 861 | Structural aspects of the flame propagation theory |
| E. S. Oran | 877 | Numerical simulation of flames: current status and future perspectives |
| A. A. Zenin | 889 | Thermal structure of solid flames |

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

- | | | |
|--------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commission on Electroanalytical Chemistry (Y. Marcus) | 899 | Thermodynamic functions of transfer of single ions from water to non-aqueous and mixed solvents (based on an extrathermodynamic assumption): Part 5 - Gibbs energies of transfer into aqueous alcohols |
| Commission on Radiochemistry and Nuclear Techniques (N. E. Holden) | 941 | Total half-lives for selected nuclides |
| Commission on Radiochemistry and Nuclear Techniques (J.-P. Adloff) | 959 | Information on training in radiochemistry and nuclear techniques |

JUNE

Plenary and Session Lectures presented at the Twenty-seventh International Conference on Coordination Chemistry held at Broadbeach, Australia: 2-7 July 1989

T. G. Appleton

iv Preface

Plenary lectures

T. J. Meyer

1003 Intramolecular control of excited state electron and energy electron transfer

A. Nakamura, N. Ueyama and K. Tatsumi

1011 Transition metal thiolates: synthetic, catalytic, and biomimetic aspects

M. I. Bruce (G. J. Burrows Lecture)

1021 Carbenes, carbides, and carbon. Ten years of transition metal-acetylene chemistry

J.-C. Chambron,
C. Dietrich-Buchecker,
C. Hemmert, A.-K. Khemiss,
D. Mitchell, J.-P. Sauvage and
J. Weiss

1027 Interlacing molecular threads on transition metals

Session lectures

P. Jutzi

1035 π -Coordination to main-group elements—some new resultsG. R. Clark, C. E. F. Rickard,
W. R. Roper, D. M. Salter and
L. J. Wright

1039 Compounds with ruthenium-silicon and osmium-silicon bonds

A. M. Bond

1043 Novel aspects of electrochemical oxidation of inorganic compounds in non-coordinating media

H. A. O. Hill

1047 The electrochemistry of metalloproteins

K. M. Kadish and X. Mu

1051 Spectroelectrochemistry of metalloporphyrins

A. G. Wedd and J. T. Spence

1055 Oxo-molybdenum enzymes: new insights from metal and ligand hyperfine coupling

T. Tanaka and K. Tanaka

1059 Simulation of the nitrogen cycle in microbial systems

E. I. Solomon, J. L. Cole and
M. J. Baldwin

1063 Structure-function correlations in copper clusters in proteins

E. N. Baker, B. F. Anderson,
H. M. Baker, M. Haridas,
G. E. Norris, S. V. Rumball
and C. A. Smith

1067 Metal and anion binding sites in lactoferrin and related proteins

A. J. Thomson, S. J. George,
F. A. Armstrong, E. C. Hatchikian
and M. G. Yates

1071 Electrochemical and spectroscopic studies of ferredoxins

B. Lippert, W. Micklitz, O. Renn,
G. Trötscher, I. Dieter and
G. Frommer

1075 Platinum coordination chemistry with nucleobases

J. Baldas	1079	Chemistry of technitium nitrido complexes
A. Ceulemanns and L. G. Vanquickenborne	1081	The coordination of π -conjugated bidentate ligands
X.-Z. You, W.-X. Wu, and A.-B. Dai	1087	Calculation of NMR chemical shifts of inorganic compounds by empirical molecular orbital methods
P. C. Ford, T. L. Netzel, C. T. Spillett, and D. B. Pourreau	1091	Dynamics of reactive intermediates as probed by flash photolysis: the rhodium(II) complexes $\text{RhCl}(\text{CO})\text{L}_2$ [$\text{L} = \text{PPh}_3$, $\text{P}(p\text{-tolyl})_3$, or PMe_3]
L. Mønsted and O. Mønsted	1095	Photochemical water exchange in chromium-(III) complexes, and mechanism of solvent assisted excited state deactivation
V. Balzani	1099	Supramolecular photochemistry
R. N. Perutz	1103	Photochemical C-H bond activation; NMR, matrix and laser kinetic studies
A. Harriman and A. K. Novak	1107	Importance of reactant conformation upon the rates of rapid electron transfer reactions in homogeneous solution
A. Shanzer, P. Yakirevitch, H. Gottlieb, Y. Tor, and J. Libman	1111	Polytopic chiral binders
R. M. Izatt, R. L. Bruening, B. J. Tarbet, L. D. Griffin, M. L. Bruening, K. E. Krakowiak, and J. S. Bradshaw	1115	Macrocyclic-metal cation interactions involving polyaza macrocycles bonded to silica gel via a nitrogen donor atom
G. De Santis, A. Poggi, B. Seghi and L. Fabbri	1119	Metal complexes that transport electrons across liquid membranes
S. R. Cooper	1123	Supertripodal ligands
T. Yoshida, T. Adachi and T. Ueda	1127	Chemistry of crown thioether complexes of low-valent second-row transition metals
B. Bosnich	1131	Molecular graphics and asymmetric catalysis
H. Takaya, T. Ohta, K. Mashima and R. Noyori	1135	New chiral ruthenium complexes for asymmetric catalytic hydrogenations
S. B. Wild	1139	Highly stereoselective syntheses of arsenic and phosphorus macrocycles and cages
J. K. Beattie	1145	Ruthenium-catalysed homogeneous oxidation processes
M. Tanaka and T. Sakakura	1147	Catalytic C-H activation by $\text{RhCl}(\text{CO})(\text{PMe}_3)-h\nu$ system
J. E. Bercaw	1151	Carbon-hydrogen and carbon-carbon bond activation with highly electrophilic transition metal complexes
G. van Koten	1155	Novel aspects of η -diiodine coordination and diiodine oxidative addition to platinum(II) and halide transfer oxidation reactions of organo-platinum(II) with $\text{Cu}^{\text{II}}\text{X}_2$

R. J. Puddephatt	1161	Modelling catalytic intermediates with organo-latinum complexes
D. Astruc, J.-R. Hamon, D. Mandon and F. Moulines	1165	Aspects of aromatic iron sandwiches: application to organic and organometallic synthesis
K. Jonas	1169	New findings in the arene chemistry of the 3d transition metals
G. Schmid, N. Klein, B. Morun, A. Lehnert and J.-O. Malm	1175	Two, four, five-shell clusters and colloids
N. K. Eremenko and S. P. Gubin	1179	Formation of platinum and palladium clusters with carbonyl phosphine ligands
G. Longoni	1183	Interstitial nickel carbonyl clusters

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on High Temperature and Solid State Chemistry (J. Matoušek, V. Hulínský, R. Metselaar and J. Corish)	1187	Quantitative analysis of a multicomponent silicate glass by electron microprobe
Commission on Analytical Nomenclature (W. Horwitz)	1193	Nomenclature for sampling in analytical chemistry (Recommendations 1990)
Commission on Electroanalytical Chemistry (Y. Marcus and T. Mussini)	1209	The extrapolation of emf data to infinite dilution in non-aqueous and mixed solvents

JULY

Plenary and invited lectures presented at the Seventeenth International Symposium on the Chemistry of Natural Products, held in New Delhi, India: 4-9 February 1990

Sukh Dev	vi	Preface; <i>in memoriam</i> H. Erdtman
----------	----	----------------------------------------

Plenary Lectures

E. J. Corey	1209	New enantioselective routes to biologically interesting compounds
H. Wagner	1217	Search for plant derived natural products with immunostimulatory activity: recent advances
K. Nakanishi, R. Goodnow, K. Konno, M. Niwa, R. Bukownik, T. A. Kallimopoulos, P. Usherwood, A. T. Eldefrawi and M. E. Eldefrawi	1223	Philanthotoxin-433 (PhT _x -433), a non-competitive glutamate receptor inhibitor
M. H. Fisher	1231	Recent advances in avermectin research
W. Oppolzer	1241	Camphor as a natural source of chirality in asymmetric synthesis
C. Benezra	1251	Molecular recognition in allergic contact dermatitis to natural products

- | | | |
|-------------------------------------------------|------|------------------------------------------------------------------------------|
| G. B. Elyakov, V. A. Stonik and
E. V. Levina | 1259 | Marine tetracyclic isoprenoids: structure and biosynthesis |
| G. Mehta | 1263 | Enantioselective terpene synthesis based on R-(+)-limonene |
| A. I. Scott | 1269 | Mechanistic and evolutionary aspects of vitamin B ₁₂ biosynthesis |

Invited Lectures

Section: Natural Products and Human Health

- | | | |
|------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------|
| K. L. Rinehart, R. Sakai,
T. G. Holt, N. L. Fregeau,
T. J. Perun, Jr., D. S. Seigler,
G. R. Wilson and L. S. Shield | 1277 | Biologically active natural products |
| O. Tanaka | 1281 | Recent studies on glycosides from plant drugs of Himalaya and south-western China: chemo-geographical correlation of <i>Panax</i> species |
| S. Ghosal | 1285 | Chemistry of shilajit, an immunomodulatory Ayurvedic <i>rasayan</i> |
| A. K. Ganguly, S. W. McCombie,
B. Cox, S. Lin and A. I. McPhail | 1289 | Stereospecific synthesis of the aglycone of pseudopterosin E |
| M. K. Gurjar | 1293 | Synthesis of enantiomerically pure compounds of biological interest |
| C. Szántay | 1299 | Indole alkaloids in human medicine |
| R. Vlahov, St. Parushev, J. Vlahov,
P. Nickel and G. Snatzke | 1303 | Synthesis of some new quinoline derivatives – potential antimalarial drugs |

Section: Natural Products and Agriculture

- | | | |
|------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| K. Mori, S. Kuwahara and
Y. Igarashi | 1307 | Chemistry of the American cockroach pheromone |
| A. Krief, D. Surleraux, W. Dumont,
P. Pasau, and Ph. Lecomte | 1311 | From grape to grape: novel stereoselective syntheses of chiral pyrethroids – synthesis of the most potent commercially available insecticides |
| V. A. Khripach | 1319 | Synthesis of brassinosteroids |
| J. Meinwald | 1325 | Alkaloids and isoprenoids as defensive and signalling agents among insects |
| M. Lindström, T. Norin and
K. Sjödin | 1329 | Plant constituents as signals for aggregation and attack of pest insects |
| J. S. Yadav, P. K. Deshpande and
G. V. M. Sharma | 1333 | Synthesis of biologically active compounds of agricultural interest |
| J. W. ApSimon, B. A. Blackwell,
L. Blais, D. A. Fielder,
R. Greenhalgh, G. Kasitu,
J. D. Miller and M. Savard | 1339 | Mycotoxins from <i>fusarium</i> species: detection, determination and variety |
| T. Ueno | 1347 | Secondary metabolites related to host selection by plant pathogenic fungi |

Section: Natural Products and Personal Sophistication

- | | | |
|--------------------------------------------------|------|----------------------------------------------------------------------------------------------------|
| C. R. Enzell and I. Wahlberg | 1353 | Tobacco isoprenoids – precursors of important aroma constituents |
| B. D. Mookherjee, R. W. Trenkle and R. A. Wilson | 1357 | The chemistry of flowers, fruits and spices: live vs. dead – a new dimension in fragrance research |
| L. Jaenicke and F.-J. Marner | 1365 | The irones and their origin |
| A. F. Thomas | 1369 | The use of monoterpenes to synthesize complex cyclic structures |
| H. J. Yardley | 1373 | Human epidermal lipids |
| B. Winter | 1377 | Studies related to ambergris-type odorants |
| P. Schudel | 1381 | Odour, a fascinating phenomenon |

Section: General Natural Products Chemistry

- | | | |
|-------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Atta-ur-Rahman and M. M. Qureshi | 1385 | Applications of modern 2D-NMR techniques in structure elucidation of natural products |
| D. S. Bhakuni | 1389 | Synthetic studies towards forskolin |
| F. J. Schmitz, F. S. DeGuzman, Y.-H. Choi, M. B. Hossain, S. K. Rizvi and D. van der Helm | 1393 | Biologically active compounds from marine organisms |
| S. V. Kessar | 1397 | Novel use of organosilanes and boranes in natural product synthesis |
| G. Ourisson | 1401 | The general role of terpenes and their global significance |
| S. Itô and T. Tsunoda | 1405 | A few new methods for asymmetric synthesis |
| H. H. Wasserman and C. B. Vu | 1409 | The use of vicinal tricarbonyl derivatives in alkaloid synthesis |
| U. R. Ghatak | 1413 | An expeditious total synthetic route to naturally occurring tricarbo-cyclic ring-C-aromatic diterpenoids: mechanisms of cyclalkylations |

Section: Bioorganic Chemistry

- | | | |
|----------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------|
| K. Krishna, M. Sukumar and P. Balaram | 1417 | Structural chemistry and membrane modifying activity of the fungal polypeptides zervamicins, antiameobins and efraeptins |
| K. Schaffner, S. E. Braslavsky and A. Holzwarth | 1421 | Photophysics and photochemistry of phytochrome, a chromoprotein in plants |
| V. K. Bhalla, M. R. Sairam and E. S. Browne | 1427 | Significance of carbohydrate residues in human chorionic gonadotropin (hCG) for expression of biological activity |
| V. T. Ivanov, O. M. Vol'pina, A. Yu. Surovoi, T. D. Volkova, A. T. Kozhich and L. D. Tchikin | 1433 | Towards synthetic antiviral vaccines |

- | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|
| S. Ranganathan, D. Ranganathan,
S. Bamezai, W. P. Singh,
D. Bhattacharyya, G. P. Sing,
R. Rath, S. Saini, N. Jayaraman
and B. K. Patel | 1437 | Chemical approaches to the re-structuring of proteins |
| T. Nagasawa and H. Yamada | 1441 | Application of nitrile converting enzymes for the production of useful compounds |
| J. Bryan Jones | 1445 | Esterases in organic synthesis: present and future |
| C. Fuganti | 1449 | Baker's yeast mediated synthesis of natural products |
| A. K. Lala, H. F. Batliwala and
S. Bhat | 1453 | Topography of multiple spanning transmembrane proteins – a photochemical approach |

AUGUST

Plenary and invited lectures presented at the Thirteenth International Symposium on Photochemistry, held at the University of Warwick, Coventry, UK: 22–28 July 1990

- | | | |
|------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------|
| R. S. Davidson | iv | Preface; <i>in memoriam</i> E. Havinga |
| V. Balzani, L. De Cola, L. Prodi and
F. Scandola | 1457 | Photochemistry of supramolecular and species |
| A. M. Braun and E. Oliveros | 1467 | Applications of singlet oxygen reactions: mechanistic and kinetic investigations |
| H. Dürr | 1477 | A new photochromic system—potential limitations and perspectives |
| N. P. Ernsting, B. Dick and
Th. Arthen-Engeland | 1483 | The primary photochemical reaction step of unsubstituted indolino-spiropyrans |
| H. Hennig, D. Rehorek, R. Stich
and L. Weber | 1489 | Photocatalysis induced by light-sensitive co-ordination compounds |
| M. Irie | 1495 | Properties and applications of photoresponsive polymers |
| E. Lissi and M. A. Rubio | 1503 | $O_2(^3\Sigma)$ and $O_2(^1\Delta)$ processes in microheterogeneous systems |
| K. Maruyama and A. Osuka | 1511 | A chemical approach toward photosynthetic reaction center |
| P. Mathis | 1521 | Primary processes in photosynthetic reaction centers |
| T. Miyashi, H. Ikeda, A. Konno,
O. Okitsu and Y. Takahashi | 1531 | Photoinduced electron-transfer reactions of the cope and related systems |
| R. N. Perutz, S. T. Belt,
A. McCamley and
M. K. Whittlesey | 1539 | C–H activation by organometallics: the role of matrix isolation studies |
| R. Z. Sagdeev and
E. G. Bagryanskaya | 1547 | Stimulated nuclear polarization—a new method for studying the mechanisms of photochemical reactions |

- | | | |
|-----------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------|
| J. C. Scaiano, V. Wintgens and
J. C. Netto-Ferreira | 1557 | Mechanistic studies of the photogeneration and photochemistry of <i>ortho</i> -xylenes |
| G. B. Schuster | 1565 | Photochemistry of organoborates: intra-ion pair electron transfer to cyanines |
| J. P. Simons | 1573 | Stereodynamics of molecular photodissociation |
| R. Srinivasan, B. Braren and
K. G. Casey | 1581 | Ultraviolet laser ablation and decomposition of organic materials |
| J. W. Verhoeven | 1585 | Electron transport via saturated hydrocarbon bridges: 'exciplex' emission from flexible, rigid and semiflexible bichromophores |
| P. A. Wender, R. Ternansky,
M. deLong, S. Singh, A. Olivero
and K. Rice | 1597 | Arene-alkene cycloadditions and organic synthesis |
| X. Coqueret, A. Hajaiej,
A. Lablache-Combier,
C. Loucheux, R. Mercier,
L. Pouliquen and
L. Randrianarisoa-Ramanantsoa | 1603 | Synthesis and properties of photoreactive polysiloxanes containing pendant functional groups |
| M. Kasha | 1615 | Four great personalities of science: G. N. Lewis, J. Franck, R. S. Mulliken and A. Szent-Györgyi |

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

- | | | |
|-----------------------------------------------|------|-----------------------------------------------------|
| Commission on Photochemistry
(D. F. Eaton) | 1631 | Recommended methods for fluorescence decay analysis |
|-----------------------------------------------|------|-----------------------------------------------------|

SEPTEMBER

Plenary and invited lectures presented at the Ninth International Symposium on Plasma Chemistry held at Pugnuchiuso, Italy: 4-8 September 1989

Plenary Lectures

- | | | |
|------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|
| G. G. Volpi | 1649 | Elementary processes in chemical dynamics |
| M. L. Mandich, W. D. Reents, Jr.
and K. D. Kolenbrander | 1653 | Chemical properties of small silicon clusters |
| M. Hirose and S. Miyazaki | 1661 | Plasma deposition of semiconductor multi-layer structures |
| U. Kogelschatz | 1667 | Silent discharges for the generation of ultraviolet and vacuum ultraviolet excimer radiation |
| H. H. Maecker | 1675 | Effects of chemical reactions in arcs |

Invited Lectures

Topical lectures: cold plasma

- | | | |
|-----------|------|----------------------------------------|
| J. Perrin | 1681 | Deposition of amorphous silicon alloys |
|-----------|------|----------------------------------------|

H. K. Yasuda, Y. S. Yeh and S. Fusselman	1689	A growth mechanism for the vacuum deposition of polymeric materials
F. D. Egitto	1699	Plasma etching and modification of organic polymers
D. L. Flamm	1709	Mechanisms of silicon etching in fluorine- and chlorine-containing plasmas
N. St. J. Braithwaite	1721	Electron energy distribution functions in processing plasmas
D. I. Slovetsky	1729	Modelling of chemical reactions under non-equilibrium halogenated electrical discharge conditions
A. Gicquel, N. Laidani, P. Saillard and J. Amouroux	1743	Plasma and nitrides: application to the nitriding of titanium
S. Nakayama	1751	ECR (electron cyclotron resonance) plasma for thin film technology
A. S. Harrus, G. W. Hills and M. J. Thoma	1757	The effect of non-reactive ions on the properties of PECVD (plasma enhanced chemical vapor deposition) TEOS (tetraethoxysilane) oxides
<i>Topical lectures: thermal plasma</i>		
N. A. Barcza, T. R. Curr and R. T. Jones	1761	Metallurgy of open-bath plasma processes
K. Takeda, M. Ito and S. Takeuchi	1773	Properties of coatings and applications of low pressure plasma spray
O. P. Solonenko	1783	Complex investigation of thermophysical processes in plasma-jet spraying
H.-D. Steffens and M. Mack	1801	Plasma spraying as an advanced tool in surface engineering
P. C. Kong and Y. C. Lau	1809	Plasma synthesis of ceramic powders
O. I. Yas'ko	1817	Some aspects of the generalization of electric arc characteristics
R. W. Smith and D. Apelian	1825	Plasma spray consolidation of materials
C. H. Kruger, T. Owano and M. Gordon	1833	Measurements of nonequilibrium effects in thermal plasmas

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Electrochemistry (G. Gritzner)	1839	Polarographic half-wave potentials of cations in nonaqueous solvents
-------------------------------------------------	------	----------------------------------------------------------------------

OCTOBER

Plenary and invited lectures presented at the Eighth International Conference on Organic Synthesis held in Helsinki, Finland: 23-27 July 1990

T. A. Hase, J. Koskimies, G. Brunow and L. Koskinen	iv	Preface
--------------------------------------------------------	----	---------

Plenary Lectures

- | | | |
|-------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------|
| R. Breslow | 1859 | Enzyme mimics |
| B. Cazes | 1867 | Synthetic methodology involving the carbo-palladation of allenes |
| I. Fleming | 1879 | Stereocontrol in organic synthesis using silicon compounds |
| S. Hanessian, J. Franco and B. Larouche | 1887 | The psychobiological basis of heuristic synthesis planning—man, machine and the chiron approach |
| C. H. Heathcock, S. Piettre and J. Kath | 1911 | Mechanistic investigations of a biomimetic polycyclization process that leads to the <i>Daphniphyllum</i> alkaloids |
| W. L. Jorgensen, E. R. Laird, A. J. Gushurst, J. M. Fleischer, S. A. Gothe, H. E. Helson, G. D. Paderes and S. Sinclair | 1921 | CAMEO: a program for the logical prediction of the products of organic reactions |
| P. Kociński and C. Barber | 1933 | Synthetic applications of metallate rearrangements |
| W. Oppolzer | 1941 | Regio- and stereocontrolled catalytic palladium- and nickel 'ene-type' cyclizations |
| G. H. Posner | 1949 | New synthetic methodology using organo-sulfur compounds |

Invited Lectures

- | | | |
|--------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------|
| J. Barluenga, F. Aznar, S. Fustero and M. Tomás | 1957 | New perspectives of carbo- and hetero-1,3-dienes in organic synthesis |
| J. Bergman and B. Peicman | 1967 | Synthesis of carbazole alkaloids |
| T. Takabatake and M. Bersohn | 1977 | Synthetic routes proposed by a noninteractive synthesis program |
| R. F. C. Brown | 1981 | Are flash pyrolytic reactions useful? |
| V. Fiandanese | 1987 | Sequential cross-coupling reactions as a versatile synthetic tool |
| R. W. Hoffmann, G. Niel and A. Schlapbach | 1993 | Stereocontrol in allylboration reactions |
| D. Hoppe, T. Krämer, J.-R. Schwark and O. Zschage | 1999 | Metallated 2-alkenyl carbamates: chiral homoenolate reagents for asymmetric synthesis |
| M. Isobe, T. Nishikawa, A. Herunsalee, T. Tsukiyama, Y. Hirose, K. Shimokawa and T. Goto | 2007 | Methodology for stereochemical control in bioactive natural product synthesis—new methods toward enediyne antitumor antibiotics |
| E. Keinan, S. C. Sinha, A. Sinha-Bagchi, E. Benory, M. C. Ghazi, Z. Eshhar and B. S. Green | 2013 | Towards antibody-mediated metallo-porphyrin chemistry |
| G. L. Larson | 2021 | α -silyl carbonyl compounds |

- | | | |
|-----------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P. Laszlo | 2027 | Catalysis of organic reactions by inorganic solids |
| S. V. Ley | 2031 | Stereoselective synthesis of inositol phosphates |
| M. F. Semmelhack, C. Kim,
N. Zhang, C. Bodurow, M. Sanner,
W. Dobler and M. Meier | 2035 | Intramolecular alkoxy-carbonylation of hydroxy alkenes promoted by Pd(II) |
| E. P. Serebryakov, N. Cong Hao
and M. V. Mavrov | 2041 | Chiral building blocks based on technical grade β -citronellene |
| V. Snieckus | 2047 | The directed ortho metalation reaction. Methodology, applications, synthetic links, and a non-aromatic ramification |
| L. Hill, C. J. Richards and
S. E. Thomas | 2057 | Transition metal-stabilised vinylketenes |
| H. Yamamoto and K. Maruoka | 2063 | Stereo- and regioselective organic transformations based on main group organo-metallic reagents—application to the stereo-controlled Claisen rearrangements |

NOVEMBER

Plenary and specially invited lectures presented at the Fourth International Symposium on Solubility Phenomena held in Troy, NY, USA: 1–3 August 1990

- | | | |
|----------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------|
| Y. Marcus | 2069 | Solubility and solvation in mixed solvent systems |
| S. Ahrland | 2077 | Complex equilibria, solvation and solubility |
| R. F. Prini | 2083 | Influence of thermodynamic variables and molecular parameters in the solubility of gases in liquids |
| F. A. Lewis | 2091 | Solubility of hydrogen in metals |
| L. Andreoli-Ball, S. J. Sun,
L. M. Trejo, M. Costas and
D. Patterson | 2097 | Thermodynamics and structure in non-electrolyte solutions |
| I. C. Sanchez and P. A. Rodgers | 2107 | Solubility of gases in polymers |
| J-P. E. Grolier | 2115 | Solution calorimetry at high temperatures and elevated pressures |
| A. F. Danil de Namor | 2121 | Thermodynamics of host-guest interactions: Solubility enhancements |
| V. M. Valyashko | 2129 | Sub- and supercritical equilibria in aqueous electrolyte solutions |

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

- | | | |
|-----------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------|
| Commission on Polymer
Characterization and Properties
(S. Amiya, S. Tsuchiya, R. Qian
and A. Nakajima) | 2139 | The study of microstructures of poly(vinyl alcohol) by NMR |
|-----------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------|

- | | | |
|----------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------|
| Commission on General Aspects of Analytical Chemistry
(L. Sommer, G. Ackermann, D. Thorburn Burns & S. B. Savvin) | 2147 | Present and future status of organic analytical reagents—Part I: General remarks |
| Commission on Atmospheric Chemistry (J. G. Calvert) | 2167 | Glossary of atmospheric chemistry terms (Recommendations 1990) |

DECEMBER

Plenary lectures presented at the Twenty-first International Conference on Solution Chemistry held in Ottawa, Canada: 5–10 August 1990

- | | | |
|-----------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|
| C. Detellier | iv | Preface |
| K. J. Laidler | 2221 | A century of solution chemistry |
| D. B. Smithrud, E. M. Sanford, I. Chao, S. B. Ferguson, D. R. Carcanague, J. D. Evanseck, K. N. Houk and F. Diederich | 2227 | Solvent effects in molecular recognition |
| E. M. Eyring, S. Petrucci, M. Xu, L. J. Rodriguez, D. P. Cobranchi, M. Masiker and P. Firman | 2237 | Lithium ion complexation kinetics by cyclic and acyclic polyethers |
| J. D. Simon | 2243 | Solvation dynamics: new insights into chemical reaction and relaxation processes |
| T. Yamaguchi | 2251 | Diffraction and X-ray absorption studies of electrolyte solutions |
| B. G. Cox and H. Schneider | 2259 | Kinetics and mechanism of macrocyclic complex formation |
| V. Zutić, V. Svetličić and J. Tomašić | 2269 | Dissolved and dispersed organic matter in natural waters. Progress by electroanalysis |
| B. C.-Y. Lu, D. Zhang and W. Sheng | 2277 | Solubility enhancement in supercritical solvents |
| J. Barthel, R. Buchner, K. Bachhuber, H. Hetzenauer, M. Kleebauer and H. Ortmaier | 2287 | Molecular processes in electrolyte solutions at microwave frequencies |

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

- | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commissions on Molecular Structure and Spectroscopy & Colloid and Surface Chemistry including Catalysis (J. H. Block, A. M. Bradshaw, P. C. Gravelle, J. Haber, R. S. Hansen, M. W. Roberts, N. Sheppard and K. Tamaru) | 2297 | A survey of experimental techniques in surface chemical physics |
| Commission on General Aspects of Analytical Chemistry (L. Sommer, G. Ackermann and D. Thorburn Burns) | 2323 | Present and future status of organic analytical reagents – Part II. Inorganic chemical analysis: classical methods, molecular spectroscopy (absorption and emission) and solvent extraction |
| Commission on Oils, Fats and Derivatives (W. D. Pocklington) | 2339 | Determination of the iodine value of oils and fats: results of a collaborative study |

